



# UNITED STATES PATENT AND TRADEMARK OFFICE

U  
UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/707,112	11/21/2003	Ming-Hung Lo	11761-US-PA	1111
31561	7590	08/10/2004	EXAMINER	
JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE 7 FLOOR-1, NO. 100 ROOSEVELT ROAD, SECTION 2 TAIPEI, 100 TAIWAN			GURLEY, LYNNE ANN	
		ART UNIT		PAPER NUMBER
		2812		
DATE MAILED: 08/10/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/707,112	LO ET AL.
	Examiner Lynne A. Gurley	Art Unit 2812

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 21 November 2003.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-11 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-11 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

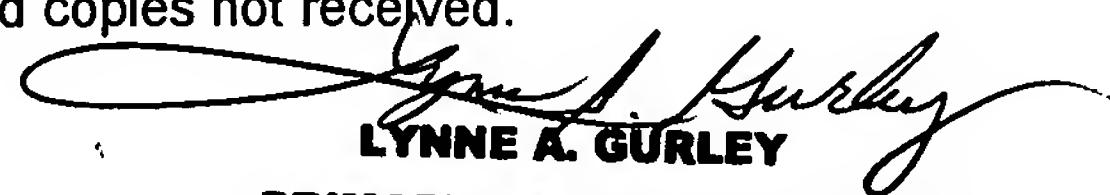
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.



LYNNE A. GURLEY

**PRIMARY PATENT EXAMINER**

**TC 2800, AU 2812**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____ .

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Specification***

2. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US 6,426,016, dated 7/30/02) in view of Wolf et al., Silicon Processing for the VLSI Era, Vol. 1, Lattice Press 1986, pp. 166-174, 182-195, further in view of Wang et al. (US 6,291,331, dated 9/18/01) and Perng et al. (US 6,523,494, dated 2/25/03, filed 9/12/00).

Yang shows the method substantially as claimed in figures 4-6 and corresponding text, with passivation layers 230 (PECVD silicon oxide) and 240 (PECVD silicon nitride) (column 4, lines 35-46) on a semiconductor substrate 200/210/220 with metallic layer (column 1, lines 30-48; column 3, lines 57-67; column 4, lines 1-35).

Yang lacks anticipation only in not teaching that the PECVD for the first passivation layer is performed at a processing pressure between 9 to 25 torr; the processing power is between 1-600 watts; a semi-atmospheric chemical vapor deposition process is carried out inside a reaction chamber to form the first passivation layer over the metallic layer; the reactive materials in the semi-atmospheric chemical vapor deposition process comprise liquid TEOS and ozone; the TEOS is flowed between 500-3000 sccm and the ozone is flowed between 5000-15000 sccm;

and, the pressure inside the reaction chamber during the semi-atmospheric CVD is between 20-750 torr; at a temperature between 200-600 degrees C.

Wolf teaches conventional method of deposition for silicon oxide and silicon nitride, as well as an overview of PECVD and sub./semi atmospheric deposition apparatus.

Wang teaches conventional flow rates for TEOS deposition and temperatures for SACVD deposition (column 7, lines 3-40).

Perng teaches an apparatus for deposition of low-k silicon oxide using PECVD and SACVD. Ozne and TEOS, pressures between 6-12 Torr and temperatures and flow rates for PECVD are discussed (columns 11-13).

It would have been obvious to one of ordinary skill in the art to have had the PECVD for the first passivation layer be performed at a processing pressure between 9 to 25 torrs and to have had the processing power be between 1-600 watts, in the method of Yang, with the motivation that Wolf teaches that the film characteristics are dependent on the deposition parameters, so that 9-25 torr and 1-600 Watts would be an optimization of a desired characteristic of the deposited film, especially since Wolf teaches that the deposition processes are all related, with variation in parameters such as power, energy, pressure and temperature. Additionally, Perng teaches an application of PECVD at the claimed pressure range.

It would have been obvious to one of ordinary skill in the art to have carried out a semi-atmospheric chemical vapor deposition process inside a reaction chamber to form the first passivation layer over the metallic layer; to have had the reactive materials in the semi-atmospheric chemical vapor deposition process comprise liquid TEOS and ozone; to have flowed the TEOS between 500-3000 sccm and the ozone between 5000-15000 sccm; and, to have had

Art Unit: 2812

the pressure inside the reaction chamber during the semi-atmospheric CVD be between 20-750 torr; at a temperature between 200-600 degrees C, in the method of yang, with the motivation given by Wang, Wolf and Perng, wherein Wang and Perng teach that the claimed ranges are well within the specific application of the SACVD process, and, Wolf teaches the general optimization of parameters, including the processing power, flow rates, temperatures and pressures.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne A. Gurley whose telephone number is 571-272-1670. The examiner can normally be reached on M-F 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Niebling can be reached on 571-272-1679. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Lynne A. Gurley  
Primary Patent Examiner  
TC 2800, Art Unit 2812

LAG  
August 6, 2004